Claims

We claim:

- 1. An isolated antibody having binding affinity for a nucleic acid molecule having a 2'-deoxy-2'-fluoro Uridine nucleoside and/or nucleotide.
- 2. The isolated antibody of claim 1, wherein said nucleic acid molecule comprises a short interfering nucleic acid (siNA).

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3. The isolated antibody of claim 2, wherein said siNA is a duplex siNA.

- 4. The isolated antibody of claim 3, wherein the 2'-deoxy-2'-fluoro Uridine nucleoside is present in one or both strands of said duplex siNA.
- 5. The isolated antibody of claim 2, wherein said siNA is a hairpin siNA.
- 6. The antibody of claim 1, wherein said antibody is a monoclonal antibody.
- 7. The antibody of claim 1, wherein said antibody is a murine IgG2b antibody.
- 8. A method for generating a monoclonal antibody (mAb) having binding affinity for nucleic acid molecules having a 2'-deoxy-2'-fluoro Uridine nucleoside or nucleotide comprising:
 - (a) conjugating a polynucleotide comprising a 2'-deoxy-2'-fluoro Uridine to a carrier protein to form a polynucleotide-protein conjugate;
 - (b) immunizing a mammal with the conjugate from (a);
 - (c) obtaining antibody producing cells from the immunized mammal of (b);
 - (d) fusing the cells obtained in step (c) with a myeloma cell under conditions suitable for generating a hybridoma; and

- (e) using supernatant from the hybridoma of (d) in a fusion screen under conditions suitable for isolating the monoclonal antibody.
- 9. The method of claim 8, wherein the mammal is a mouse.
- 10. The method of claim 9, wherein said mouse is a SJL mouse.
- 11. The method of claim 8, wherein the 2'-deoxy-2'-fluoro Uridine polynucleotide is a biotinylated polynucleotide.
- 12. The method of claim 8, wherein said nucleic acid molecule having a 2'-deoxy-2'-fluoro Uridine nucleoside or nucleotide is a siNA molecule.
- 13. The method of claim 12, wherein said siNA is a duplex siNA.
- 14. The method of claim 12, wherein said siNA is a hairpin siNA.
- 15. A method for generating a monoclonal antibody (mAb) having binding affinity for a short interfering nucleic acid (siNA) comprising:
 - (a) conjugating the siNA to a carrier protein to form a siNA-protein conjugate;
 - (b) immunizing a mammal with the conjugate from (a);
 - (c) obtaining antibody producing cells from the immunized mammal of (b);
 - (d) fusing the cells obtained in step (c) with a myeloma under conditions suitable for generating a hybridoma; and
 - (e) using supernatant from the hybridoma of (d) in a fusion screen under conditions suitable for isolating the monoclonal antibody.
- 16. The method of claim 15, wherein said siNA is a duplex siNA.
- 17. The method of claim 15, wherein said siNA is a hairpin siNA.

- 18. A method for detecting the presence of a nucleic acid molecule having a 2'-deoxy-2'-fluoro Uridine nucleotide in a patient comprising:
 - (a) obtaining a biological sample from the patient; and
 - (b) contacting the sample of (a) with a monoclonal antibody having specific binding affinity for the nucleic acid molecule having a 2'-deoxy-2'-fluoro Uridine nucleotide under conditions suitable for detecting the presence of said nucleic acid molecule in the patient.
- 19. The method of claim 18, wherein said nucleic acid molecule having a 2'-deoxy-2'-fluoro Uridine nucleotide is a siNA molecule.
- 20. The method of claim 19, wherein said siNA is a duplex siNA.
- 21. The method of claim 19, wherein said siNA is a hairpin siNA.
- 22. A method for detecting the presence of a siNA in a patient comprising:
 - (a) obtaining a biological sample from the patient; and
 - (b) contacting the sample of (a) with a monoclonal antibody having specific binding affinity for the siNA under conditions suitable for detecting the presence of said siNA in the patient.
- 23. The method of claim 22, wherein the patient is a patient treated with a siNA molecule having one or more 2'-deoxy-2'-fluoro Uridine nucleotides.
- 24. A method for screening candidate 2'-deoxy-2'-fluoro modified siNA molecules for bioavailability in a mammal comprising:
 - (a) administering the candidate siNA molecule to the mammal;
 - (b) obtaining a biological sample from the mammal; and
 - (c) contacting the sample of (b) with the antibody of claim 1 under conditions suitable for detecting the presence of the siNA molecule in the sample.

- 25. The method of claim 24, wherein the mammal is a mouse, rat, or pig.
- 26. The method of claim 24, wherein the mammal is a human.
- 27. A method for determining the level of a 2'-deoxy-2'-fluoro modified siNA in a mammal comprising:
 - (a) administering the candidate siNA molecule to the mammal;
 - (b) obtaining a biological sample from the mammal;
 - (c) contacting the sample of (b) with the antibody of claim 1 under conditions suitable for detecting the presence of the siNA molecule in the sample, and
 - (d) assaying for the siNA molecule in the sample under conditions suitable to determine the level of the siNA molecule in the sample and/or mammal.
- 28. The method of claim 27, wherein the mammal is a mouse, rat, or pig.
- 29. The method of claim 27, wherein the mammal is a human.